

Claims:

1. A method for manufacturing an electronic module, characterized by:

- 5 - taking a sheet, which has a first (1a) and a second (1b) surface, and which sheet includes an insulating-material layer (1) between the first (1a) and the second (1b) surface, as well as a conductive layer (4) on at least the first surface (1a),
- 10 - making at least one recess (2) in the sheet (1) that extends through the second surface (1b) and the insulating-material layer (1) as far as the conductive layer (4) on the first surface (1a), which covers the recess (2) from the direction of the first surface (1a),
- 15 - taking a component (6) having a contact surface with contact areas or contact protrusions,
- placing the component (6) in the recess (2) with its contact surface facing the first surface (1a) and attaching the component (6) to the conductive layer (4), which covers the recess (2) from the direction of the first surface (1a), and
- 20 - forming a conductive pattern (14), which connects electrically to at least some of the contact areas or contact protrusions of the component (6) placed in the recess (2), from the conductive layer (4) covering the recess (2).

25 2. A method according to Claim 1, wherein the components (6) are placed facing both the first (1a) and second (1b) surface in the insulating-material layer (1) and electrical contacts are formed to the components (6) in such a way that at least some of the components are connected to the conductive layer (4) on the first surface (1a) and at least some to the conductive layer (4) on the second surface (1b).

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 3. A method according to Claim 1 or 2, comprising performing, after the component (6) or several components (6) have been attached to the conductive layer (4), which closes the recess (2) or recesses (2) from the direction of the first surface (1a), the following

steps:

- making a conductive layer (9) on the second surface (1b) of the sheet,
- 5 - making at least one recess (2) in the sheet (1), which extends through the first surface (1a) and the insulating-material layer (1) as far as the conductive layer (9) on the second surface (1b), which covers the recess (2) from the direction of the second surface (1b),
- 10 - taking a component (6) having a contact surface with contact areas or contact protrusions,
- placing the component (6) in the recess (2), with its contact surface towards the second surface (1b) and attaching the component (6) to the conductive layer (4),
- 15 which covers the recess (2) from the direction of the second surface (1b), and
- forming a conductive pattern (19) from the conductive layer (9) covering the recess (2), which pattern is connected electrically to at least some of the contact areas or contact protrusions of the component (6) placed in the recess (2).

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4. A method according to Claim 1 or 2, wherein a sheet is used, which is surfaced with a conductive layer (4) on both surfaces, and in which

- 25 - at least one second recess (2) is manufactured in the sheet (1), and extends through the first surface (1a) and the insulating-material layer (1) as far as the conductive layer (4) on the second surface (1b), which covers the manufactured recess (2) from the direction of the second surface (1b),
- a component (6) is taken, which has a contact surface with contact areas or
- 30 contact protrusions,
- the component (6) is placed in the recess (2) with its contact surface facing the second surface (1b) and the component (6) is attached to the conductive layer (4),

which covers the recess (2) from the direction of the second surface (1b), and

- a conductive pattern (14) is formed from the conductive layer (4) covering the recess (2), which pattern is electrically connected to at least some of the contact areas or contact protrusions of the component (6) set in the recess (2).

5. A method according to Claim 1 or 2, wherein the thickness of the insulating-material layer (1) is less than the thickness of at least one component (6) attached to the conductive layer and in which:

- a least one second insulating-material sheet (11) is taken,

- at least one recess (2) for the said at least one component (6) attached to the conductive layer (4) is made in the second insulating-material sheet (11), and

- the second insulating-material sheet (11) is attached to the first insulating-material layer (1) from the direction of the second surface (1b).

6. A method according to Claim 1, 2, or 5, wherein a first and a second element are manufactured, both of which include an insulating-material layer (1), a conductive layer (4) on at least the first surface (1a) of the insulating-material layer (1), and at least one component (6) in at least one recess (2), and in which method:

- at least one second insulating-material sheet (11) is taken, and

- the first and the second elements are attached to each other with the aid of the said second insulating-material sheet (11), in such a way that the second surfaces (1b) of the insulating-material layers (1) contained in the elements face towards each other.

7. A method according to Claims 5 or 6, wherein the first insulating-material layer (1) is of a first insulating material and the second insulating-material sheet (11) is of a second insulating material, which differs from the first insulating material.

8. A method according to any of Claims 1 - 7, wherein at least one component (6) is attached to the conductive layer (4; 9) by gluing with the aid of an electrically conductive adhesive, so that an electrical contact is formed between the conductive layer (4; 9) and the contact areas or contact protrusions of the component (6).

9. A method according to any of Claims 1 - 7, wherein at least one component (6) is attached to the conductive layer (4; 9) by gluing with the aid of an electrically insulating adhesive and an electrical contact is formed between the component (6) and the conductive layer (4; 9) by making feed-throughs, which connect the desired contact areas to the conductive layer (4; 9).

10. A method according to any of Claims 1 - 7, wherein at least one component (6) is attached, and electrical contact with the conductive layer (4; 9) is formed by bonding the contact areas metallurgically to the conductive layer (4; 9), either directly, or through intermediary contact protrusions.

11. A method according to any of Claims 1 - 10, wherein at least one component (6) attached to the conductive layer (4; 9) is an unpacked microcircuit chip.

12. A method according to any of Claims 1 - 11, wherein, in order to create a multi-layer circuit-board structure, additional insulating layers and conductive layers are manufactured on the first (1a) and/or the second (1b) surface.

13. A method according to any of Claims 1 - 12, wherein the components (6) are embedded in at least two sheets (1), which are subsequently attached on top of each other.

14. A method according to any of Claims 1 - 13, wherein a conductive-pattern layer (14; 19) is manufactured on both the first (1a) and the second (1b) surfaces of the insulating-material layer (1).